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BY TELECOPY

Robert G. Burnley, Director
Commonwealth of Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 22319

September 20, 2005

MIRANT

Mirant Potomac River: Plan to Operate Unit 1

Dear Mr. Burnley:

As you are aware, Mirant advised the Virginia Department of Environmental Quality, by letter dated August 24, 2005, of the temporary shutdown of all five units of the Potomac River power plant. Mirant Potomac River now plans to resume generating electricity on Unit 1 of the plant on September 21, 2005. We would expect the typical operating profile to be:

- Up to 16 hours of generation per calendar day, with:
  - Up to 8 hours at full capacity (88 MW);
  - 8 or more hours at minimum capacity (35 MW); and
- At least 8 hours per day with no generation.

Attached is Update #1 to "A Dispersion Modeling Analysis of Downwash from Mirant's Potomac River Power Plant," which demonstrates that Unit 1 operating in the mode described above results in ambient air concentrations that are better than the National Ambient Air Quality Standards for SO2, PM10, and NO2, and more than ensures protection of human health and the environment surrounding the Power Plant, as required by your letter of August 19, 2005.

Mirant has determined that during the temporary period that it operates in the above mode, it will not exceed the predicted ambient impacts. In order to maintain the necessary flexibility to operate Unit 1 consistent with normal operating practices, Mirant will operate under a 24-hour SO2 tons-per-day emissions cap of 7.4 tons per calendar day with the proviso of no generation between the hours of 10:00 pm and 5:00 am. The cap was calculated by adding eight hours of SO2 emissions at 35MW, plus eight hours of SO2 emissions at 88MW, as described in the report. The cap amount is equal to the quantity of SO2 emissions modeled under Scenarios 1 & 2 in Update #1. Modeling indicates that weather conditions favorable to stack downwash typically occur during the overnight period; therefore Mirant will implement the additional operating restriction requiring no generation from Unit 1 during the hours of 10:00 pm to 5:00 am daily. The SO2 cap will constrain actual plant emissions to a level that meets the SO2, PM10, and NO2 ambient air quality standards in the downwash model. The instrumentation used to measure stack emissions will be the existing certified Continuous Emissions Monitors (CEMs) equipment on Unit 1.

Mirant plans to continue operating Unit 1 in this mode until additional solutions to address ambient air quality standards in the vicinity of the power plant are ready to be implemented.

Please call me with any questions or comments.

Sincerely,

Lisa D. Johnson
President, Mirant Potomac River, LLC

cc: Deborah Jennings, Esq

Mirant Potomac River, LLC
Alexandria, VA

Update 1 to:

A Dispersion Modeling Analysis of Downwash from Mirant's Potomac River Power Plant

Modeling Unit 1 Emissions in a Cycling Mode

ENSR Corporation
September 20, 2005
Document Number 10350-002-410 (Update 1)

1.0 INTRODUCTION

This report describes dispersion modeling performed for Unit 1 at Mirant's Potomac River Generating Station. The modeling was performed according to the Protocol approved by the Virginia Department of Environmental Quality. The purpose of the modeling was to demonstrate that Unit 1 operating alone under specified loads and during certain periods in a calendar day will not cause or contribute to exceedances of the National Ambient Air Quality Standards (NAAQS).

Section 2 of this report presents the stack and emission parameters included in the modeling. Section 3 presents modeling results and conclusions.

2.0 MODEL INPUTS

Modeling was performed using the same version of AERMOD/AERMET and the same meteorological data and receptor grid used in the August, 2005 report prepared by ENSR.

Mirant is proposing to operate Unit 1 in cycling mode in which the unit would operate up to 16 hours in a day. The unit would be shut down for the remaining 8 hours. The unit would typically operate at maximum load (88MW) for up to 8 hours in a day and minimum load (35 MW) for up to 8 hours in a day.

We have conducted dispersion modeling for two specific scenarios within this cycling frame work in order to demonstrate that NAAQS are met for all possible combinations of cycling operation. The two scenarios modeled are:

Scenario 1

- Midnight - 2:00am Not Operating
- 2:00am - 5:00am 35 MW
- 5:00am – 1:00 pm 88 MW
- 1:00pm - 6:00pm 35 MW
- 6:00 pm – Midnight Not Operating

Scenario 2

- Midnight - 5:00am Not Operating
- 5:00am - 6:00am 35 MW
- 6:00am - 10:00am 88 MW
- 10:00am - 4:00pm 35 MW
- 4:00pm - 8:00pm 88 MW
- 8:00pm - 9:00pm 35 MW
- 9:00 pm – Midnight Not Operating

Modeling assumed that only one unit operated during a calendar day.

Stack gas flow rate and exit temperature for Unit 1 at 35 MW were derived from continuous emission monitoring data for 2004. Hourly flow rates were plotted versus load and a best fit curve was derived. Similarly, hourly temperature measured at the stack breeching was plotted versus load and a best fit curve derived. The values of ACFM and temperature on the best fit curves corresponding to 35 MW were selected and used in the modeling. Exit velocity was calculated from ACFM using the stack diameter.

Power plant personnel provided the historical heat rate versus load for Unit 1. The heat rate at 35 MW for Unit 1 is 14 MMBtu/MWhr. The heat rate was used to calculate SO_2 and PM_{10} emissions at 35 MW using the following equations:

- SO_2 (lb/hr) = Unit 1 heat rate x 35 MW x 1.2 lb SO_2/MMBtu
- PM_{10} (lb/hr) = Unit 1 heat rate x 35 MW x 0.06 lb PM_{10}/MMBtu
- NOx (lb/hr) = Unit 1 heat rate x 35 MW x 0.45 lb NOx/MMBtu

SO_2 emissions at 88 MW (maximum load) were calculated in exactly the same manner as the August 2005 modeling report except that an emission factor of 1.2 lb SO_2/MMBtu was used instead of the permit limit of 1.52 lb SO_2/MMBtu. Historical data indicate that the power plant emits less than 1.2 lb SO_2/MMBtu. PM_{10} emissions at 88 MW were calculated in the same manner as the August 2005 report except that an emission factor of 0.06 lb/MMBtu was used instead of the permit limit of 0.12 lb/MMBtu. Stack testing indicates that maximum PM/PM_{10} emissions are 0.06 lb/MMBtu. The NOx emission rate at 88 MW is the same value used in the August 2005 modeling report, 473.9 lb/hr.

Table 2-1 shows the stack and flue gas exit parameters used in modeling Unit 1 stack emissions.

Sources of PM_{10} emissions include the Unit 1 combustion stack, two fly ash silos and one bottom ash silo, plus material handling sources. Table 2-1 shows the Unit 1 stack emissions plus the silos. In modeling PM_{10} emissions from PRGS when only Unit 1 is operating, Mirant assumed that emissions from all the silos and from the material handling sources are 20% of what they are when all units are operating at maximum load. This is because Unit 1 produces approximately 20% of the entire station's power output. The one exception to this is the coal pile wind erosion. We assumed that these emissions remain the same as they were in the August 2005 modeling.

The emissions shown in Tables 2-1 and 2-2 below for the non combustion sources represent 20% of the values listed in Tables 2-1 and 2-2 in the August 2005 modeling report, with the exception of the coal pile wind erosion.

Table 2-1

Stack and Emission Parameters Used in the Modeling

Point Source	Height	Diameter	Temp (K)		Exit Velocity (m/s)		SO2 Emissions (g/s)		PM10 Emissions (g/s)		NOx Emissions (g/s)	
	m	m	35 MW	88 MW	35 MW	88 MW	35 MW	88MW	35 MW	88MW	35 MW	88MW
Boiler 1/Stack 1	48.2	2.6	442.6	444.3	19.0	35.7	74.1	159.2	3.7	8.0	27.8	59.7
Fly Ash Silo	33.6	1.0	293.0		0.1		0.0		0.017		0.0	
Fly Ash Silo	33.6	1.0	293.0		0.1		0.0		0.017		0.0	
Bottom Ash Silo	31.0	1.0	293.0		0.1		0.0		0.023		0.0	

Notes:

1. Heat Rate (MMBtu/MWhr) @ 35 MW = 14 for Unit 1
2. SO2 emissions @ 35 MW = Heat Rate (MMBtu/MWhr) x 1.2 lb SO2/ MMBtu x MW
3. SO2 emissions at 88 MW = 1053 MMBtu/hr x 1.2 lb SO2/MMBtu for Unit 1
4. PM10 emissions @ 35 MW = Heat rate (MMBtu/MWhr) x 0.06 lb PM10 / MMBtu x MW
5. PM10 emissions @ 88MW = 1053MMBtu/hr x 0.06 lb/MMBtu for Unit 1

Table 2-2 - Mirant Potomac: Fugitive Sources

Area Sources	Size	Height	PM_{10} Existing Emissions			
	m^2	m	lb/hr	tpy	g/sec	g/sec-m^2
Ash Loader Upgrade	546	2.0	0.01	0.01	0.001	2.36E-06
Coal Pile Wind Erosion and Dust Suppression	17,679	4.6	0.93	1.12	0.118	6.66E-06
Coal Stackout Conveyor Dust Suppression	263	9.1	0.01	0.04	0.001	4.38E-06
Coal Railcar Unloading Dust Suppression	288	1.0	0.02	0.01	0.003	1.08E-05
Ash trucks on Paved Roads	5,886	1.0	0.12	0.24	0.015	2.57E-06

Notes:
Coal Pile = 4 acres = 17,679 m^2
Modeled height of coal pile = one half of average pile height = 30 feet x 0.5 = 15 feet (4.6 meters)
Modeled height stackout conveyor dust supression = average height of coal pile (9.1 meters)
Resuspended roadway dust from paved roads: area = 2 x 0.3 miles x 20 feet wide = 5,886 square meters

3.0 MODELING RESULTS

3.1 Sulfur Dioxide (SO_2) Modeling Results

Tables 3-1 and 3-2 present results of modeling SO_2 emissions from Unit 1 at PRGS for Scenarios 1 and 2, respectively. Highest second highest 3-hour and 24-hour impacts and highest annual average impacts for each year are presented in the tables. Modeled impacts are added to the highest monitored background concentrations for comparison with the NAAQS. The monitored background for the 24-hour average was 60.3ug/m^3. This represented the highest, second highest concentration over the three year (2002-2004) period used in the August 2005 report. Mirant reviewed daily monitored concentrations for this 3-year period and determined that the highest monitored background concentrations do not occur on the days when highest 24-hour SO_2 impacts are predicted from Unit 1. Therefore, Mirant is substituting a slightly lower background concentration of 51 ug/m^3 for purposes of demonstrating that the described operating scenario assures the NAAQS are met.

Scenario 1

As shown in Table 3-1, the highest second highest 3-hour average SO2 concentration is 1,165 ug/m^3. This concentration is below the 1,300 ug/m^3 3-hour NAAQS. The highest, second highest 24–hour average concentration is 356 ug/m^3. This concentration is also below the 365 ug/m^3 24-hour NAAQS. Finally, the highest annual average concentration of 55 ug/m^3 is below the 80 ug/m^3 annual NAAQS.

Scenario 2

As shown in Table 3-2, the highest second highest 3-hour average SO2 concentration is 1,238 ug/m^3. This concentration is below the 1,300 ug/m^3 3-hour NAAQS. The highest, second highest 24–hour average concentration is 364 ug/m^3. This concentration is below the 365 ug/m^3 24-hour NAAQS. Finally, the highest annual average concentration of 57 ug/m^3 is below the 80 ug/m^3 annual NAAQS.

3.2 PM_{10} Results

Table 3-3 presents results of modeling PM_{10} emissions from Unit 1 plus all other non-combustion sources at PRGS. Modeling was performed for Scenario 2 only because modeled impacts are significantly below the NAAQS and would also be significantly below the NAAQS for Scenario 1. The highest, second highest 24-hour average concentration is 100 ug/m^3. This concentration is below the 150 ug/m^3 24-hour NAAQS. The highest annual average concentration of 32.6 ug/m^3 is below the 50 ug/m^3 annual NAAQS.

3.3 Nitrogen Oxides (as NO_2) Results

Table 3-4 presents results of modeling Unit 1 NOx emissions for Scenario 2. Modeling was performed for Scenario 2 only because modeled impacts are significantly below the NAAQS and would also be significantly below the NAAQS for Scenario 1. Maximum total NO_2 concentrations are predicted to be 60 ug/m^3. This concentration is below 100 ug/m^3 annual NAAQS.

3.4 Conclusions

Modeling results indicate that Unit 1 in the mode described above results in ambient air concentrations that are better than the NAAQS for SO_2, PM_{10} and NO_2.

Table 3-1 AERMOD Modeling Results for SO2 - Scenario 1

Year	Pollutant	Averaging Period	AERMOD-PRIME	Monitored Background	AERMOD-PRIME + Background *	NAAQS	Impact Location		Distance	Direction	Ground Elevation	Flagpole Elevation
			Predicted Concentrations (µg/m^3)				X (m)	Y (m)	m	deg	m	m
2000	SO_2	3-hour	763.5	238.4	1,001.9	1300	322770.8	4298791.5	182.7	349	6.1	39.6
		24-hour	266.5	51.0	317.5	365	322880.8	4298542.5	102.7	133	6.7	0.0
		Annual	39.6	15.7	55.3	80	322880.8	4298542.5	102.7	133	6.7	0.0
2001	SO_2	3-hour	926.3	238.4	1,164.7	1300	322729.9	4298820.0	221.1	340	7.7	39.6
		24-hour	305.4	51.0	356.4	365	322787.7	4298786.0	174.8	354	4.6	39.6
		Annual	37.4	15.7	53.1	80	322880.8	4298542.5	102.7	133	6.7	0.0
2002	SO_2	3-hour	842.2	238.4	1,080.6	1300	322770.8	4298791.5	182.7	349	6.1	39.6
		24-hour	277.0	51.0	328.0	365	322770.8	4298791.5	182.7	349	6.1	39.6
		Annual	29.9	15.7	45.6	80	322787.7	4298786.0	174.8	354	4.6	39.6
2003	SO_2	3-hour	701.7	238.4	940.1	1300	322858.6	4298648.5	64.6	56	4.1	0.0
		24-hour	220.7	51.0	271.7	365	322880.8	4298542.5	102.7	133	6.7	39.6
		Annual	24.5	15.7	40.2	80	322871.6	4298565.0	81.4	125	5.6	0.0
2004	SO_2	3-hour	726.6	238.4	965.0	1300	322770.8	4298791.5	182.7	349	6.1	39.6
		24-hour	285.7	51.0	336.7	365	322880.8	4298542.5	102.7	133	6.7	39.6
		Annual	28.7	15.7	44.4	80	322880.8	4298542.5	102.7	133	6.7	0.0

* SO2 background concentrations for 24-hour averaging period are less than 51 ug/m3 during periods when highest impacts from Unit 1 are predicted.

Table 3-2 AERMOD Modeling Results for SO2 - Scenario 2

Year	Pollutant	Averaging Period	AERMOD-PRIME	Monitored Background	AERMOD-PRIME + Background *	NAAQS	Impact Location		Distance	Direction	Ground Elevation	Flagpole Elevation
			Predicted Concentrations ((g/m^3)				X (m)	Y (m)	m	deg	m	m
2000	SO_2	3-hour	750.5	238.4	988.9	1300	322700.9	4298819.5	232.2	333	10.3	39.6
		24-hour	295.7	51.0	346.7	365	322747.6	4298814.0	210.0	344	6.6	39.6
		Annual	40.9	15.7	56.6	80	322871.6	4298565.0	81.4	125	5.6	39.6
2001	SO_2	3-hour	893.9	238.4	1,132.3	1300	322717.6	4298816.5	222.4	337	8.8	39.6
		24-hour	280.6	51.0	331.6	365	322787.7	4298786.0	174.8	354	4.6	39.6
		Annual	40.9	15.7	56.6	80	322770.8	4298791.5	182.7	349	6.1	39.6
2002	SO_2	3-hour	1,000.0	238.4	1,238.4	1300	322717.6	4298816.5	222.4	337	8.8	39.6
		24-hour	313.3	51.0	364.3	365	322770.8	4298791.5	182.7	349	6.1	39.6
		Annual	33.3	15.7	49.0	80	322787.7	4298786.0	174.8	354	4.6	39.6
2003	SO_2	3-hour	765.3	238.4	1,003.7	1300	322858.6	4298648.5	64.6	56	4.1	0.0
		24-hour	231.7	51.0	282.7	365	322880.8	4298542.5	102.7	133	6.7	0.0
		Annual	24.5	15.7	40.2	80	322871.6	4298565.0	81.4	125	5.6	39.6
2004	SO_2	3-hour	750.2	238.4	988.6	1300	322858.6	4298648.5	64.6	56	4.1	0.0
		24-hour	266.7	51.0	317.7	365	322880.8	4298542.5	102.7	133	6.7	0.0
		Annual	28.6	15.7	44.3	80	322880.8	4298542.5	102.7	133	6.7	0.0

* SO2 background concentrations for 24-hour averaging period are less than 51 ug/m3 during periods when highest impacts from Unit 1 are predicted.

Table 3-3 AERMOD Modeling Results for PM10 - Scenario 2

Year	Pollutant	Averaging Period	*AERMOD-PRIME*	*Monitored Background*	*AERMOD-PRIME + Background **	*NAAQS*	Impact Location		Distance	Direction	Ground Elevation	Flagpole Elevation
							X (m)	Y (m)	m	deg	m	m
2000	PM10	24-hour	45.4	45	90.4	150	322810.6	4298329.0	283.1	179	10.6	0.0
		Annual	10.0	21	31.0	50	322904.4	4298462.5	179.5	146	10.6	0.0
2001	PM10	24-hour	55.2	45	100.2	150	322810.6	4298329.0	283.1	179	10.6	0.0
		Annual	11.3	21	32.3	50	322904.4	4298462.5	179.5	146	10.6	0.0
2002	PM10	24-hour	48.3	45	93.3	150	322810.6	4298329.0	283.1	179	10.6	0.0
		Annual	10.5	21	31.5	50	322904.4	4298462.5	179.5	146	8.3	0.0
2003	PM10	24-hour	41.4	45	86.4	150	322810.6	4298329.0	283.1	179	10.6	0.0
		Annual	11.6	21	32.6	50	322810.6	4298329.0	283.1	179	10.6	0.0
2004	PM10	24-hour	40.6	45	85.6	150	322810.6	4298329.0	283.1	179	4.1	0.0
		Annual	10.4	21	31.4	50	322810.6	4298329.0	283.1	179	10.6	0.0

* PM10 background air quality data was bawed on the highest concentrations over the past three years (2001-2003) from the monitors located at 2675 Sherwood Hall Lane or Cob Run, Lee Road. Both monitors are in Fairfax County.

Table 3-4 AERMOD Results for NO2 - Scenario 2

Year	Pollutant	Averaging Period	AERMOD-PRIME	Monitored Background	AERMOD-PRIME + Background *	NAAQS	Impact Location		Distance	Direction	Ground Elevation	Flagpole Elevation
			Predicted Concentrations (µg/m^3)				X (m)	Y (m)	m	deg	m	m
2000	NO_2	Annual	11.5	48.9	60.4	100	322871.6	4298565.0	81.4	125	5.6	0.0
2001	NO_2	Annual	11.5	48.9	60.4	100	322770.8	4298791.5	182.7	349	6.1	39.6
2002	NO_2	Annual	9.4	48.9	58.3	100	322787.7	4298786.0	174.8	354	4.6	39.6
2003	NO_2	Annual	6.9	48.9	55.8	100	322871.6	4298565.0	81.4	125	5.6	0.0
2004	NO_2	Annual	8.0	48.9	56.9	100	322880.8	4298542.5	102.7	133	6.7	0.0

NOx concentrations were multiplied by 0.75 to obtain NO_2 estimates in accordance with USEPA guidelines.